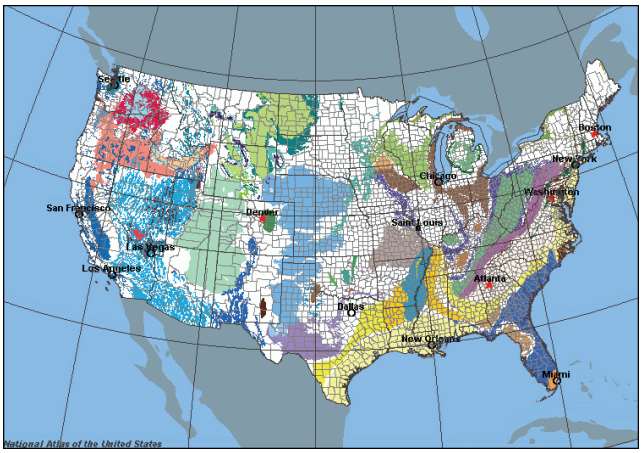
Unit 3

Indiana's Water Riches
Water Above and Below the Ground

Glaciers, Groundwater and Surface Water, Oh My!

Did you know that glaciers, groundwater and surface water are connected? Groundwater is found in aquifers — underground areas of soil that are saturated with water. The water in some aquifers flow from one place to another. Groundwater fills the spaces and cracks (voids) between soil particles and is pumped and can be pumped to the surface. Surface water is what we see in lakes, rivers, streams and ponds. But what does this have to do with glaciers?

Glaciers are large masses of ice that move very, very slowly. Because they are big and heavy, they push and move soil, sand, dirt in front of them. Did you know that about 2/3 of Indiana was once covered by a glacier? During the Ice Age, over 15,000 years ago, a large glacier moved slowly down from the north and stopped partway though Indiana where it melted leaving rivers, lakes, and groundwater. The aquifers in northern Indiana are easier to reach when drilling a well and you may be able to pump as much as 100-500 gallons of water a minute.



National Map: this map displays large aquifers in the United States. From http://nationalatlas.gov/natlas/Natlasstart.asp.

Southern Indiana did not get buried under the glacier like northern Indiana did. So southern Indiana tends to be more hilly (not as flat) than northern Indiana. Southern Indiana has more rock and stone and less sand and other sediments. This causes challenges when trying to locate groundwater.

Aquifers are not as plentiful or large in southern Indiana due to the bedrock found there. It can be difficult to find and drill down to an aquifer so you may only be able to pump about 5-100 gallons a minute in southern Indiana.

Questions:

What is the difference between groundwater and surface water?

How do northern Indiana and southern Indiana aquifers differ?

Do you have well water? Does it taste different than the water at school? If so, why do you think that is?

Vocabulary Words

Aquifer

Saturated soil that carries or stores groundwater.

Bedrock

Solid rock, usually under soil or rock fragments.

Glaciers

Huge masses of ice that once covered northern Indiana.

Groundwater

Water under the Earth's surface, found in spaces in the soil and cracks in bedrock.

Infiltration

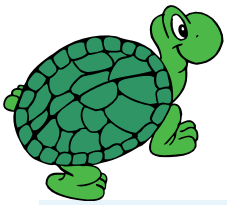
Water movement into the soil at its surface.

Percolation

Water movement downward through the soil, below the soil surface.

Surface Water

Water at the earth's surface; lakes, streams, rivers, and oceans.



Ask Sheldon

Dear Sheldon,

My brother told me that a water table looks like a kitchen table buried in the ground. Is this what a water table looks like?

Mystified

Dear Mystified,

I think your brother is pulling your leg. Scientists do talk about the water table, but it is not like a kitchen table. If you dig down into the ground, you will find a place where water fills most voids (spaces) and your hole will have water seeping into it. This is called the aquifer (water-saturated zone). The top of aquifer is called the water table.

Sheldon

Dear Sheldon,

My cousin lives in Nebraska and uses groundwater to irrigate corn. He says the water is pumped from the biggest water supply in North America called the Ogallala Aquifer. They are worried it will run out of water. If we pump water out of Indiana aquifers, will we run out of water?

Irene

Dear Irene,

Hoosiers don't have to worry as much about having enough water as people that live in some other places because we are lucky enough to have plenty of precipitation (rain and snow). Aquifers are replenished with water from rain and snow. Precipitation that is not used by people, plants, or animals percolates into the ground and replenishes our aquifers. But we have to be careful not to use too much and not to pollute the water that is percolated into the aquifers.

Sheldon

Irrigator at work in a bean field. Image from USGS.

Image of a stone quarry that has filled with water. How do you think the water got there?

Did You Know?

Geology is the study of the Earth, its structure, physical properties and history. But does this have to do with water? Geologists study rocks and minerals. Every state undergoes a Geological Survey so scientists can understand the local geology and how water moves through the state and where it is stored. This is very important to the study of water and our understanding our water

Indiana's Water Riches is part of a multimedia program presented by Purdue Cooperative Extension Service and 4-H Youth Development. Materials made possible by 1990 Indiana Crossroads Funds. Materials adapted for use in Indiana by Susan Edinger, Cheri Janssen, Paul Sharp, Sherry Anderson, Dianna Rathert.

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Think, Write and Discuss

In one of Sheldon's letters, he mentioed that we don't need to worry as much about having enough water as people living in other places. Name some places that don't have enough water. Do you remember a time when we have had a drought in Indiana? How does a drought effect people?

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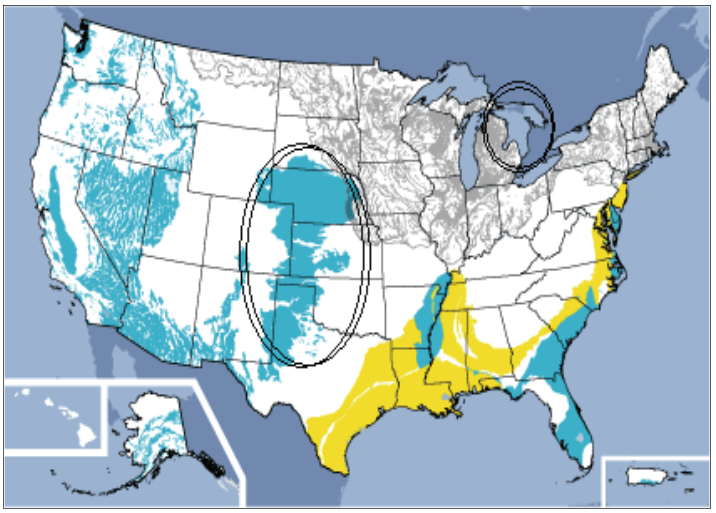

The large circle, in the middle of the map, shows the Ogallala Aquifer. It is the biggest supply of groundwater in North America. It's water table is being lowered each year by irrigation.

Fill in the blank and here is your word bank:

Infiltration Glacier Aquifer

1. _____ Huge masses of ice that once covered northern Indiana.

2. _____ Water movement into the soil at its surface.

3. _____ Saturated soil that carries or stores groundwater

Droplet of Information:

Did you know that you can take Geology as a 4-H project? This is an exciting project that introduces you to the study of the earth processes including glaciers, rocks, fossils and much more!